. . . TRIMS 1. A chuck for a probe station comprising: (a) a first chuck assembly element having an a wafer; and

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upper surface thereon suitable to support (b) a chuck spacing mechanism connected to said first chuck assembly element having

exactly three independent supports defining the spacing between said first chuck assembly element and another chuck assembly element.

The chuck of claim 1 wherein said chuck spacing mechanism maintain said first chuck assembly 15 element and said another chuck assembly element in a rigid relationship with respect to each other.

3. The chuck of claim 1 wherein each of said supports are substantially equal distant from one 20 another.

4. The chuck of claim 1 wherein each of said supports is free from directly electrically interconnecting said first chuck assembly element and said another chuck assembly element.

5. The chuck of claim 1 wherein said first chuck assembly element is electrically connected to a on mal path.

e. The chuck of claim 5 wherein sala another ripurk accombly element is electrically connected to a

The chuck of claim I surther the APP APPLE said first chuck assembly element having a v Čt. lower surface, said first chuck assembly element defining at least one first air path therein to said upper surface; 5 said another chuck assembly element having (b) an upper surface in opposing relationship to said lower surface of said first chuck assembly element, said second chuck assembly defining at least one second air 10 path therein; and an interconnecting member interconnecting (C) said first air path and said second air path in such a manner that a vacuum may be provided from said first air path to said 15 second air path, said interconnecting member movable with respect to at least one of said first chuck assembly element and said second chuck assembly element. 20 The chuck of claim 1 further comprising: 8. said first chuck assembly element having a (a) lower surface defining at least one recess therein; and a cover plate in overlying relationship to 25 (b) said lower surface of said first chuck assembly element together defining at least a portion of an air path to said upper surface suitable for providing a vacuum to said wafer supported by said upper surface. 9. The phuck of claim 1 comprising: a first chuck assembly element having a lower surface, said first chick tenemily element defining at least one first air path therein to said upper surface;

said another muck assembly element having an upper surface in opposing relationship to said lower surface of said first churk assembly element, said second chuck assembly defining at least one second air 5 path therein; and an interconnecting member interconnecting (c)said first air path and said second air path in such a manner that a vacuum may be 10 provided from said first air path to said second air path. 10. The chuck of claim 9 wherein said interconnecting member is located closer the periphery of said first chuck assembly element than a nearest member determining, at least in part, the spacing between said first chuck assembly element and said another chuck assembly element. 20 11. The chuck of claim 1 comprising: said first chuck assembly element having a lower surface; said another chuck assembly element having (b) an upper surface and a lower surface where 25 the upper surface is in opposing relationship to said lower surface of said first chuck assembly element; and (c) a cover plate in overlying relationship to at least a major portion of said lower surface of said another chuck assembly 51. element proximate said chuck spacing mechanism element. 12. The chuck of claim 1 comprising: said first chuck assembly element having a lower surface;

said another chuck assembly element having an upper surrage and a lower surface where the upper surface is in opposing relationship to said lower surface of said 5 first chuck assembly element; and at least one of said supports including an insulator having a first surface and a second surface surrounding at least a portion of said at least one supports between the upper and lower surfaces of 10 said another chuck assembly element, at least a first portion of a first surface of said insulator in pressing engagement with said another chuck assembly element, at least a second portion of a second 15 surface of said insulator in pressing engagement with said at least one support. The chuck of claim 1 wherein said first 13. portion of said first surface and said second portion of 20 said second surface have an overlapping relationship over at least a major portion of at least one of said first portion and said second portion. 14. The chuck of claim 1 comprising: 25 said first chuck assembly element having a (a) lower surface: said another chuck assembly element having (b) an upper surface and a lower surface where the upper surface is in opposing 70 relationship to said lower surface of said first chuck assembly element; and at least one of said supports including a denerally U-snaped insulator having a first surface in pressing entagement with said upper surface of said another chuck ansembly bloment and a segond surface in

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pressing engagement with a first surface of a generally U-shaped conductive spacer, a second surface of said U-shaped conductive spacer in pressing engagement with said lower surface of said first chuck assembly element.

- 15. The chuck of claim 1 comprising:
- (a) said first chuck assembly element having a lower surface;
- (b) said another chuck assembly element having an upper surface and a lower surface where the upper surface is in opposing relationship to said lower surface of said first chuck assembly element;
- (c) a chuck spacing mechanism interconnecting said first and second chuck assembly elements and defining the spacing between said first and second chuck assembly elements; and
- at least one of said supports including an (d) insulator having a first surface in pressing engagement with said upper surface of said another chuck assembly element and a second surface in pressing engagement with a first surface of a conductive spacer, a second surface of said conductive spacer in pressing engagement with said lower surface of said first chuck assembly element, where said first surface of said insulator in pressing engagement with said upper surface is substantially directly opposing and coextensive with said accord surface. of said insulator in pressing (nga beren) with said conductive spacer.

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7.4 16. The chuck of claim 1 further sumplising: said first chuck assembly element having a 1 lower surface; said another chuck assembly element having 127 an upper surface and a lower surface where the upper surface is in opposing relationship to said lower surface of said first chuck assembly element; and said chuck spacing mechanism including an (C) insulator having a first surface in 10 pressing engagement with said upper surface of said another chuck assembly element and a second surface in pressing engagement with a first surface of a conductive spacer, a second surface of 15 said conductive spacer in pressing engagement with said lower surface of said first chuck assembly element, where said first surface of said insulator in pressing engagement with said upper 20 surface is less than one third the thickness of said conductive spacer in pressing engagement with said second. surface. 25 A chuck for a probe station comprising: 17. a first chuck assembly element having a (a) lower surface and an upper surface suitable to support a wafer, said first chuck assembly element defining at least 30 one first air path therein to said upper surface; a second chuck assembly element having an (d) upper surface in opposing relationship to said lower surface of said first minuk . : assembly element, said second shuck

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assembly defining at least one second air path therein; and

an interconnecting member interconnecting said first air path and said second air path in such a manner that a vacuum may be provided from said first air path to said second air path, said interconnecting member movable with respect to at least one of said first chuck assembly element and said second chuck assembly element.

18. The chuck of claim 17 further comprising:

(a) said first chuck assembly element defining a first opening in said lower surface of said first chuck assembly element; and

(b) said interconnecting member engaged with said first opening.

- 19. The chuck of claim 17 further comprising:
- (a) said second chuck assembly element defining a second opening in said upper surface of said second chuck assembly element; and
- (b) said interconnecting member engaged with said second opening.
- 20. The chuck of claim 18 further comprising:
- (a) said first chuck assembly element defining a first opening in said lower surface of said first chuck assembly element; and
- (b) said interconnecting member engaged with said first opening.
- 21. The chuck of claim 20 wherein said

 into reduce in a member is engaged with said first add

 sector openings in a manner that provides a vacuum seal.

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in. The chuck of claim II wherein said interconnecting member includes an elongate cheming defined therein to interconnect said first air path and said second air path in such a manner that a vacuum may be provided from said first air path to said second air path. The chuck of claim 17 further comprising a chuck spacing mechanism connected to said first chuck assembly element having exactly three independent 10 supports defining the spacing between said first chuck assembly element and said second chuck assembly element. The chuck of claim 17 further comprising: 24. said lower surface of first chuck assembly 15 (a) element defining at least one recess therein: and a cover plate in overlying relationship to (b) said lower surface of said first chuck assembly element together defining at 2.0 least a portion of an air path to said upper surface suitable for providing a vacuum to said wafer supported by said upper surface. 2.5 The chuck of claim 17 further comprising: 25. a chuck spacing mechanism interconnecting (a) said first and second chuck assemply elements and defining the spacing between 20 said first and second chuck assembly elements; and (b) a cover plate in overlying relationship to at least a major portion of said lower surface of said second chuck assembly rrowimate said chuck spacilio te lanism element.

Lf. The whack of claim is further comprising: a chuck spacing mechanism interdonnecting said first and second chuck assembly elements and defining the spacing between said first and second chuck assembly elements; and said chuck spacing mechanism including an (b) insulator having a first surface and a second surface surrounding at least a portion of said chuck spacing mechanism between the upper and lower surfaces of said second chuck assembly element, at least a first portion of a first surface of said insulator in pressing engagement with said second chuck assembly element, at least a second portion of a second surface of said insulator in pressing engagement with said chuck spacing mechanism, where said first portion of said first surface and said second portion of said second surface have an overlapping relationship over at least a major portion of at least one of said first portion and said second portion. The chuck of claim 17 further comprising: 27. a chuck spacing mechanism interconnecting (a) said first and second chuck assembly elements and defining the spacing between said first and second chuck assembly elements; and said chuck spacing mechanism including a denerally U-shaped insulator having a first surface in pressing engagement with rand upper ruria; e .i raid second undok assembly element and a second surface in pressing en maement with a first surface.

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of a denomally U-sharpa conductive sharps, a second surface of said Usshared conductive spacer in pressing engagement with said lower surface of said first chuck assembly element. ٤., The chuck of claim 17 further comprising: 28. a chuck spacing mechanism interconnecting (a) said first and second chuck assembly 10 elements and defining the spacing between said first and second chuck assembly elements; and $\cdot b$ said chuck spacing mechanism including an insulator having a first surface in 7 6 pressing engagement with said upper surface of said second chuck assembly element and a second surface in pressing engagement with a first surface of a conductive spacer, a second surface of said conductive spacer in pressing 20 engagement with said lower surface of said first chuck assembly element, where said first surface of said insulator in pressing engagement with said upper 25 surface is substantially directly opposing and coextensive with said second surface of said insulator in pressing engagement with said conductive snacer. 26 29. The chuck of claim 17 further comprising: (a) a chuck spacing mechanism interconnecting said first and second chuck assembly elements and defining the spacing between said first and second chuck accembly -lements; ani said chuck bracin; medianiem, including in memiate harma a fine surfue in

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pressing engagement with said upper surface of said second chuck assembly element and a second surface in pressing engagement with a first surface of a conductive spacer, a second surface of said conductive spacer in pressing engagement with said lower surface of said first chuck assembly element, where said first surface of said insulator in pressing engagement with said upper surface is less than one third the thickness of said conductive spacer in pressing engagement with said second surface.

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30. A chuck for a probe station comprising:

- (a) a first chuck assembly element having a lower surface and an upper surface,
- (b) said lower surface of first chuck assembly element defining at least one recess therein; and
- (c) a cover plate in overlying relationship to said lower surface of said first chuck assembly element together defining at least a portion of an air path to said upper surface suitable for providing a vacuum to said wafer supported by said upper surface.
- 31. The chuck of claim 30 wherein said upper surface is suitable to support a wafer.
- Should the chuck of claim 30 further gampersung a second chuck assembly element wherein said second thick assembly element is suitable to support a waren there in

30 es. The chuck of claim 30 wherein said cover plate is substantially thinner than said first chuck assembly element. 34. The chuck of claim 30 wherein said cover 5 plate is substantially coplanar with said first chuck assembly element The chuck of claim 30 wherein said cover plate is in an overlying relationship to a major portion 10 of said lower surface of said first chuck assembly element. 36. The chuck of claim 30 further comprising said lower surface of first chuck assembly element 1.5 defining a plurality of recesses, each of which is concentric with respect to each other. 37. The chuck of claim 30 further comprising: (a) said first chuck assembly element having 20 said upper surface thereon suitable to support a wafer; and a chuck spacing mechanism connected to (b) said first chuck assembly element having 25 exactly three independent supports defining the spacing between said first chuck assembly element and another chuck assembly element. The chuck of claim 30 further comprising: 38. 30 said first chuck assembly element having (a) said upper surface suitable to support a wafer, said first chuck assembly element defining at least one first in path therein to said write curiant . : a second chuck assembly element having an b) urger surface in opp sing relationship to

.: 1 said lower surface or said first chuck assembly element, said second chuck assembly defining at least one second air path therein; and (c) an interconnecting member interconnecting 5 said first air path and said second air path in such a manner that a vacuum may be provided from said first air path to said second air path, said interconnecting member movable with respect to at least 10 one of said first chuck assembly element and said second chuck assembly element. The chuck of claim 30 further comprising: 39. said first chuck assembly element having (a) 15 said upper surface thereon suitable to support a wafer; a second chuck assembly element having an (b) upper surface and a lower surface where the upper surface is in opposing 20 relationship to said lower surface of said first chuck assembly element; a chuck spacing mechanism interconnecting (c) said first and second chuck assembly elements and defining the spacing between 25 said first and second chuck assembly elements; and a cover plate in overlying relationship to (d) at least a major portion of said lower surface of said second chuck assembly 30 proximate said chuck spacing mechanism element. 40. The shuck of claim 40 further comprising: said first into assembly element having said upper surface thereon contable to support a words;

(b) a second chuck assembly element having an upper surface and a lower surface where the upper surface is in opposing relationship to said lower surface of said first chuck assembly element;
(c) a chuck spacing mechanism interconnecting said first and second chuck assembly elements and defining the spacing between said first and second chuck assembly elements; and
(d) said chuck spacing mechanism including an

insulator having a first surface and a second surface surrounding at least a portion of said chuck spacing mechanism between the upper and lower surfaces of said second chuck assembly element, at least a first portion of a first surface of said insulator in pressing engagement with said second chuck assembly element, at least a second portion of a second surface of said insulator in pressing engagement with said chuck spacing mechanism, where said first portion of said first surface and said second portion of said second surface have an everlapping relationship over at least a major portion of at least one of said first portion and said second partion.

- 41. The chuck of claim 30 further comprising:
- (a) said first chuck assembly element having said upper surface thereon suitable to support a water;
- 1 a recommi chuck assembly element having an opportunition and a lower surface where the upper surface is in opportunit

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33 relationship to said lower surface of said first chuck assembly element; a chuck spacing mechanism interconnecting said first and second chuck assembly ٤, elements and defining the spacing between said first and second chuck assembly elements; and said chuck spacing mechanism including a (d) generally U-shaped insulator having a 10 first surface in pressing engagement with said upper surface of said second chuck assembly element and a second surface in pressing engagement with a first surface of a generally U-shaped conductive spacer, 1 0 a second surface of said U-shaped conductive spacer in pressing engagement with said lower surface of said first chuck assembly element.

- 42. The chuck of claim 30 further comprising:
- (a) said first chuck assembly element having said upper surface thereon suitable to support a wafer;
- (b) a second chuck assembly element having an upper surface and a lower surface where the upper surface is in opposing relationship to said lower surface of said first chuck assembly element;
- a chuck spacing mechanism interconnecting said first and second chuck assembly elements and defining the spacing between said first and second chuck assembly elements; and
- (d) said chuck spacing mechanism including an incular a having a first surface in pressing engagement with said upper surface of said second chuck as weakly

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element and a second surface in present engagement with a first surface of a conductive spacer, a second surface it said conductive spacer in pressing engagement with said lower surface of said fines shock appeals allowers.

engagement with a first surface of a conductive spacer, a second surface of a conductive spacer in pressin: engagement with said lower surface of said first chuck assembly element, where said first surface of said insulator in pressing engagement with said upper surface is substantially directly opposing and coextensive with said second surface of said insulator in pressing engagement with said conductive spacer.

- 43. The chuck of claim 30 further comprising:
- (a) said first chuck assembly element having said upper surface thereon suitable to support a wafer;
- (b) a second chuck assembly element having an upper surface and a lower surface where the upper surface is in opposing relationship to said lower surface of said first chuck assembly element;
- (c) a chuck spacing mechanism interconnecting said first and second chuck assembly elements and defining the spacing between said first and second chuck assembly elements; and
- (d) said chuck spacing mechanism including an insulator having a first surface in pressing engagement with said upper surface of said second chuck assembly element and a second surface in pressing engagement with a first surface of a conductive spacer, a second surface of said conductive space. In prescript engagement with said liwer curface of said first churk assembly element, where call

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il state surrage dreath insulator in pressing engagement with said upper

pressing engagement with said upper surface is less than one third the thickness of said conductive spacer in pressing engagement with said second surface.

- 44. A chuck for a probe station comprising:
- (a) a first chuck assembly element having a lower surface and an upper surface suitable to support a wafer, said first chuck assembly element defining at least one first air path therein to said upper surface;
- (b) a second chuck assembly element having an upper surface in opposing relationship to said lower surface of said first chuck assembly element, said second chuck assembly defining at least one second air path therein; and
- (c) an interconnecting member interconnecting said first air path and said second air path in such a manner that a vacuum may be provided from said first air path to said second air path, said interconnecting member located closer the periphery of said first chuck assembly element than a nearest member determining, at least in part, the spacing between said first chuck assembly element and said second chuck assembly element.
- 45. A chuck for a probe station comprising:

 a first chuck assembly element having a

 lower surface and an upper currace thereon
 suitable to support a wafer;

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3.0 a second chuck assembly element having an upper surface and a lower surface where the upper surface is in opposing relationship to said lower surface of said first chuck assembly element; 1 a chuck spacing mechanism interconnecting said first and second chuck assembly elements and defining the spacing between said first and second chuck assembly 10 elements; and a cover plate in overlying relationship to (d) at least a major portion of said lower surface of said second chuck assembly proximate said chuck spacing mechanism 15 element. The chuck of claim 45 further comprising said chuck spacing mechanism connected to said first chuck assembly element having exactly three independent supports defining the spacing between said first chuck 20 assembly element and another chuck assembly element. 47. The chuck of claim 45 further comprising: said first chuck assembly element defining (a) at least one first air path therein to 25 said upper surface; said second chuck assembly defining at (b) least one second air path therein; and (c) an interconnecting member interconnecting said first air path and said second air : (path in such a manner that a vacuum may be provided from said first air path to said second air path, said interconnecting member movable with respect to at least one of said first chuck assorbly element and said second chuck assembly element.

4s. The chuck of claim 45 further comprising: said first chuck assembly element defining at least one first air path therein to said upper surface; ٤, said second chuck assembly defining at (b) least one second air path therein; and an interconnecting member interconnecting said first air path and said second air path in such a manner that a vacuum may be 10 provided from said first air path to said second air path, said interconnecting member located closer the periphery of said first chuck assembly element than a nearest member determining, at least in 15 part, the spacing between said first chuck assembly element and said second chuck assembly element. 49. The chuck of claim 45 further comprising 20 said chuck spacing mechanism including an insulator having a first surface and a second surface surrounding at least a portion of said chuck spacing mechanism between the upper and lower surfaces of said second chuck assembly element, at least a first portion of a first 25 surface of said insulator in pressing engagement with said second chuck assembly element, at least a second portion of a second surface of said insulator in pressing engagement with said chuck spacing mechanism, where said first portion of said first surface and said second 4.74 portion of said second surface have an overlapping relationship over at least a major portion of at least one of said first portion and said second portion. Sold The mark of class 45 farther womanteins gald chack (a. 1554 m. 555). The political file (b. 1765) is a shaped insulator having a first surface in preceing engagement with sail owner unrighe of said secon: thick

assembly element and a second surface in pressing engagement with a first surface of a generally U-shaped conductive spacer, a second surface of said U-shaped conductive spacer in pressing engagement with said lower surface of said first chuck assembly element. 51. The chuck of claim 45 further comprising said chuck spacing mechanism including an insulator having a first surface in pressing engagement with said upper surface of said second chuck assembly element and a 10 second surface in pressing engagement with a first surface of a conductive spacer, a second surface of said conductive spacer in pressing engagement with said lower surface of said first chuck assembly element, where said first surface of said insulator in pressing engagement 15 with said upper surface is substantially directly opposing and coextensive with said second surface of said insulator in pressing engagement with said conductive spacer. 20 52. The chuck of claim 45 further comprising said chuck spacing mechanism including an insulator having a first surface in pressing engagement with said upper surface of said second chuck assembly element and a 2.5 second surface in pressing engagement with a first surface of a conductive spacer, a second surface of said conductive spacer in pressing engagement with said lower surface of said first chuck assembly element, where said first surface of said insulator in pressing engagement with said upper surface is less than one third the thickness of said conductive spacer in pressing ensasement with said second surface. te. A thora for a probabilistic computation a la figer dione seperaty element cavida a lower surface and an opper contact there is cuitable to support a wainty

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(b) a second chuck assembly element having an upper surface and a lower surface where the upper surface is in opposing relationship to said lower surface of said first chuck assembly element;

(c) a chuck spacing mechanism interconnecting said first and second chuck assembly elements and defining the spacing between said first and second chuck assembly elements; and

(d) said chuck spacing mechanism including an insulator having a first surface and a second surface surrounding at least a portion of said chuck spacing mechanism between the upper and lower surfaces of said second chuck assembly element, at least a first portion of a first surface

least a first portion of a first surface of said insulator in pressing engagement with said second chuck assembly element, at least a second portion of a second surface of said insulator in pressing engagement with said chuck spacing mechanism, where said first portion of said first surface and said second portion of said second surface have an overlapping relationship over at least a major portion of at least one of said first portion and

54. The chuck of claim 53 wherein the portion of said insulator between the upper and lower surfaces of said second chuck assembly elecent free from contact with said chuck spacing mechanism have generally include an opposite surface that is free from contact with said include an include and the contact with said.

said second portion.

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-<u>:</u> -, 55. The chuck of claim 83 further comprising said chuck spacing mechanism connected to said first chuck assembly element having exactly three independent supports defining the spacing between said first chuck assembly element and another chuck assembly element. The chuck of claim 53 further comprising: 56. (a) said first chuck assembly element defining at least one first air path therein to 10 said upper surface; said second chuck assembly defining at (b) least one second air path therein; and (C)an interconnecting member interconnecting said first air path and said second air 15 path in such a manner that a vacuum may be provided from said first air path to said second air path, said interconnecting member movable with respect to at least one of said first chuck assembly element and said second chuck assembly element. 2:0 57. The chuck of claim 53 further comprising: said lower surface of first chuck assembly (a) element defining at least one recess 25 therein; and (b) a cover plate in overlying relationship to said lower surface of said first chuck assembly element together defining at least a portion of an air path to said 30 upper surface suitable for providing a vacuum to said wafer supported by said upper surface. 58. The chuck of plaim 53 further comprising: said first that assembly element defining at least one first air path therein to said upper surface;

. . said second whack absenbly defining at Œ, least one second air rath therein; and an interconnecting member interconnecting (C)said first air path and said second air path in such a manner that a vacuum may be provided from said first air path to said second air tath, said interconnecting member located closer the periphery of said first chuck assembly element than a nearest member determining, at least in part, the spacing between said first chuck assembly element and said second chuck assembly element. 59. The chuck of claim 53 further comprising a 15 cover plate in overlying relationship to at least a major portion of said lower surface of said second chuck assembly proximate said chuck spacing mechanism element. 60. The chuck of claim 53 further comprising 20 said chuck spacing mechanism including a generally Ushaped insulator having a first surface in pressing engagement with said upper surface of said second chuck assembly element and a second surface in pressing engagement with a first surface of a generally U-shaped 25 conductive spacer, a second surface of said U-shaped conductive spacer in pressing engagement with said lower surface of said first chuck assembly element. 61. The chuck of claim 53 further comprising said chuck spacing mechanism including an insulator having a first surface in pressing engagement with said upper surface of said second chuck assembly element and a second surface in pressing engagement with a first morface of a conditional galaxy, a second surface of card conditionable spaces in prescula engagement with said lower on tage of said first thick assembly element, where wald

. 1 inest surrage to said insulator in pressing engagement with said upper surface is substantially directly opposing and coextensive with said second surface of said insulator in pressing engagement with said conductive spacer. 5 62. The chuck of claim 53 further comprising said chuck spacing mechanism including an insulator having a first surface in pressing engagement with said upper surface of said second chuck assembly element and a 10 second surface in pressing engagement with a first surface of a conductive spacer, a second surface of said conductive spacer in pressing engagement with said lower surface of said first chuck assembly element, where said first surface of said insulator in pressing engagement 15 with said upper surface is less than one third the thickness of said conductive spacer in pressing engagement with said second surface. A chuck for a probe station comprising: 20 63. a first chuck assembly element having a (a) lower surface and an upper surface thereon suitable to support a wafer; a second chuck assembly element having an (b) upper surface and a lower surface where 25 the upper surface is in opposing relationship to said lower surface of said first chuck assembly element; a chuck spacing mechanism interconnecting said first and second chuck assembly 3.0 elements and defining the spacing between said first and second chuck assembly elements; and said chuck snadang meghanism insluding a generally Usebsped inside a harms of first surface in pressing encadement with said upper surface of haid at ""na dinak

.; . assembly element and a second surface in pressing engagement with a first surface of a generally U-shaped conductive spacer, a second surface of said U-shaped conductive spacer in pressing engagement î. with said lower surface of said first chuck assembly element. 64. The chuck of claim 63 wherein said chuck spacing mechanism includes a central member extending there through. 65. The chuck of claim 64 wherein said central member is rigidly attachable to said first chuck assembly 15 element. 66. The chuck of claim 65 wherein said central member is electrically isolated from said second chuck assembly element. 20 67. The chuck of claim 66 wherein said central member secures said first and second chuck assembly elements together with said U-shaped insulator and said U-shaped conductive spacer defining said spacing. 2 5 68. A chuck for a probe station comprising: (a) a first chuck assembly element having a lower surface and an upper surface thereon suitable to support a wafer; (b) a second chuck assembly element having an upper surface and a lower surface where the upper surface is in opposing relationship to said lower surface of said first shuck assembly element; la Hillik diabin'i medhamiam dintera bile bili s mand firem and second chuck whenliv elenents and defining the statum of tween

4 said ilest and second chuck assembly elements; and (d) said chuck spacing mechanism including an insulator having a first surface in ٤., pressing engagement with said upper surface of said second chuck assembly element and a second surface in pressing engagement with a first surface of a conductive spacer, a second surface of . . said conductive spacer in pressing engagement with said lower surface of said first chuck assembly element, where said first surface of said insulator in pressing engagement with said upper 15 surface is substantially directly opposing and coextensive with said second surface of said insulator in pressing engagement with said conductive spacer. 20 69. The shuck of slaim 68 wherein said shuck spacing mechanism includes a central member extending there through. 70. The chuck of claim 69 wherein said central 25 member is rigidly attachable to said first chuck assembly element. 71. The chuck of claim 70 wherein said central member is electrically isolated from said second chuck assembly element. 72. The chuck of claim % wherean said central member secures said first and second chuck assembly elements together with said institution and said conductive opama mailmina naia opamina.

- 73. A chuck for a price station comprising:
- (a) a first chuck assembly element having a lower surface and an upper surface thereon suitable to support a wafer;
- (b) a second chuck assembly element having an upper surface and a lower surface where the upper surface is in opposing relationship to said lower surface of said first chuck assembly element;
- (c) a chuck spacing mechanism interconnecting said first and second chuck assembly elements and defining the spacing between said first and second chuck assembly elements; and
- said chuck spacing mechanism including an (d) insulator having a first surface in pressing engagement with said upper surface of said second chuck assembly element and a second surface in pressing engagement with a first surface of a conductive spacer, a second surface of said conductive spacer in pressing engagement with said lower surface of said first chuck assembly element, where said first surface of said insulator in pressing engagement with said upper surface is less than one third the thickness of said conductive spacer in pressing engagement with said second surface.
- 74. The chuck of Grain is wherein said chuck spacing mechanism includes a central member extending there through.

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The chuck of claim 74 wherein caid central mender is rigidly attachable to said first sinck assembly 76. The chuck of claim 75 wherein said central C. member is electrically isolated from said second chuck assembly element. 77. The chuck of claim 76 wherein said central member secures said first and second chuck assembly 1(elements together with said insulator and said conductive spacer defining said spacing.